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Miami-Dade County, Florida

SCOPE OF WORK

MIAMI- DADE FIRE RESCUE

Fleet Replacement

INTRODUCTION/BACKGROUND

Miami-Dade County, hereinafter referred to as the County, as represented by the Miami-Dade Fire Rescue Department (MDFR), is soliciting proposals from qualified interested parties, hereinafter referred to as "Proposer" for the sale of 4 existing Bell 412 helicopters and for lease/purchase of 4 new replacement aircraft. MDFR utilizes these aircraft for the multi-mission purposes of medical evacuation, search and rescue, homeland security and damage assessment.

County Bell 412 Helicopter Inventory

	Tail number	Serial	Year	Airframe TT	Engines TT
AR1	N911AR	36382	2005	2044.6	1833.7/2044.6 (4000 hr TBO on engines)
AR2	N911FD	36269	2000	3794.6	3794.6 (Due engine package in 200 hrs)
AR3	N911FR	36248	1999	4276.2	366.1 (New engine package)
AR4	N911RA	36358	2004	2268.4	2268.4 (4000 hr TBO on engines)

County Specifications for New Leased Aircraft

This portion of the Scope of Work specifies the requirements for the physical characteristics, performance, and associated services for each leased Helicopter.

Quantity - The County desires to lease four Helicopters.

Operating Environments - Each Helicopter must be able to operate during the day, at night, and over all parts of Miami Dade County, including its waterways. As a matter of operating policy, it is intended that the Helicopters will be operated with two pilots under Visual Flight Rules (VFR) and Instrument Flight Rules (IFR), and who will be certified for Night Vision Imaging System (NVIS) operations.

Projected Helicopter Usage Levels and Mission Definitions

Usage Levels - Each Helicopter shall be capable of flying a minimum of five hundred (500) hours per year (approximately 625 annual missions per Helicopter). While the majority of missions are flown under Visual Flight Rules (VFR), instrument recoveries to area bases and other airports are flown under Instrument Flight Rules (IFR).

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Mission Definitions – MDFR operates within a "Multi-Mission" profile that includes medical evacuation, search and rescue, homeland security and damage assessment. Definitions of each of these missions follow:

Medevac - The "Medevac" mission as used in this document means the provision of emergency medical services care in conjunction with the rapid helicopter transport of an ill or injured patient from a field site to a trauma center or other specialty referral center within an expedited timeframe. Inter-hospital transfers are included in this mission type, and involve a helicopter providing transport for injured or ill patients from one hospital to an institution providing a higher level of medical care.

Currently, approximately ninety five (95) percent of MDFR helicopter flights involve medical evacuations.

The majority of helicopter medical evacuations are being flown in response to motor vehicle and other types of accidents generating requirements that two (2) or more patients be immediately evacuated from an accident site. Accordingly, each Helicopter must have the capability of simultaneously transporting at least two (2) critically injured persons in a side by-side litter configuration, and accommodate the transport of two (2) medical-flight attendants.

As an unplanned extension of a medical evacuation or because of other acute emergencies, it may sometimes be necessary to use County-operated helicopters to transport critically injured or ill patients from one treatment center to another. While the specific medical circumstances associated with flights of this type may vary, the following condition will, in every case, apply to such transports.

- The relocation to be accomplished is necessary to obtain a higher level of medical care required for patient survival, which for purposes of this RFP, means preservation of life, limb, or function.

The aircraft performance requirements and configurations applicable to the transport of critically injured or ill patients from one treatment center to another are essentially identical to those associated with a medical evacuation except that:

- In lieu of a second patient, some piece of specialized medical equipment, e.g., a neonatal isolette may be installed.
- Beyond the medical-flight attendants who are regular members of a Helicopter flight crew, it may be necessary to transport one or more additional medical professional. These medical professionals will typically be provided by a trauma or medical specialty referral center.

Search and Rescue - The "Search and Rescue" mission as used in this document means the provision of aerial search and rescue services for lost or disoriented persons, and missing or overdue aircraft and watercraft. This definition includes hoisting operations and the High-Rise Emergency Aerial Tactical (HEAT) Program, which uses helicopter lift capability to transport fire-rescue personnel in high-rise building emergencies.

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Homeland Security - The “Homeland Security” mission as used in this document means the provision of patrol checks of identified potential terrorist targets, performing maritime special operations sorties, evacuation duties and transporting State officials.

Damage Assessment - The “Damage Assessment” mission as used in this document means the use of a helicopter as an aerial survey platform to survey, photograph and down link images of an area that has suffered from a natural or manmade disaster.

Note:

Except for minor, temporary adjustments in configurations, the helicopter performance and aircraft-system requirements associated with search and rescue, aerial support, homeland security and damage assessment flights are essentially identical to those required for medical evacuations.

If, while an County-operated helicopter is performing some lower-priority task, a higher priority requirement develops, e.g., an accident requiring a medical evacuation, that helicopter will immediately be redeployed to meet the new, higher-priority requirement; hence, the need for a true multi-mission operating capability.

General Information

Unit of Measure - Unless otherwise specified, the following units of measurement shall be used when specifying the Helicopter characteristics, performance data and maintenance:

Temperature shall be expressed in degrees Celsius (°C). Unless otherwise specified, the outside air temperature standard shall be the International Standard Atmosphere (ISA).

Weight shall be expressed in pounds (lbs), and Crew and Passenger weight shall be calculated at 250 lbs per person. Additionally:

- Altitude shall be expressed in feet.
- Airspeed shall be expressed in knots.
- Wind speed shall be expressed in knots.
- Fuel volume shall be expressed in US gallons.
- Physical dimensions shall be expressed in feet and inches.

Standard Mission Configurations - The Helicopter shall be used in a multi-mission environment. Hence all mandatory installed mission equipment detailed in this Scope shall be carried onboard the Helicopter at all times. The primary variable in mission configuration will be the number of crew, patients, and passengers and their associated equipment.

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Medevac:

Two (2) Pilots

Two (2) Paramedics

Minimum Two (2) Patients

Search and Rescue:

Two (2) Pilots

Two (2) Paramedic

Either Two (2) Survivors and One (1) United States Coast Guard (USCG) Rescue basket and Equipment (100 lbs)

Homeland Security:

Two (2) Pilots

Two (2) Paramedic

Two (2) Passengers

Damage Assessment:

Two (2) Pilots

Two (2) Paramedic

Two (2) Passengers

**PERFORMANCE WORK STATEMENT – MANDATORY REQUIREMENTS (for all four
aircraft)**

The Helicopter shall be Type certificated by the Federal Aviation Administration (FAA).

The Helicopter, in all Standard Mission Configurations, shall meet the airworthiness standards of Federal Aviation Regulation (FAR) Part 27 or Part 29, as applicable.

The Helicopter shall have all the components, equipment and systems that are required to allow the Helicopter to meet the mission requirements of this Scope, installed, certified and ready for use prior to delivery. This shall include those items that are inherently included in a particular aircraft but not described in this Scope.

Crashworthiness

Notwithstanding that the Helicopter shall be certified under FAR Part 27 or Part 29, particular attention will be paid to features that enhance crashworthiness and crew and passenger survivability.

FAR Part 135 Compliance

The Helicopter shall meet the requirements of FAR Part 135 for the purposes of required installed equipment and systems. It is assumed that all required equipment and systems shall meet these requirements.

Weight and Balance

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When operated in accordance with the Standard Mission Configurations, the Helicopter's center of gravity (CG) shall not be allowed to move beyond the prescribed limits as specified in the manufacturer's specifications.

General Helicopter Configuration

The Helicopter shall be a twin-engine, multi-mission aircraft certified for day and night Single and/or Dual Pilot Visual Flight Rules (VFR). Instrument Flight Rules (IFR) and Night Vision Imaging Systems (NVIS) operation shall be as required by FAR Parts 91 and 135. The Helicopter shall be equipped with dual flight controls.

Standardization-

All Helicopters and installed equipment shall be standardized. Should any OEM-generated modifications occur to the Helicopter or installed equipment during the procurement period, modifications shall be retrofitted to Helicopters and installed equipment that have already been delivered and accepted by County.

Helicopter Performance

Unless otherwise specified, the following conditions and Helicopter configurations shall be used in specifying and satisfying the Helicopter performance capabilities throughout this Scope.

The Helicopter shall:

- Have all the systems that are required to allow the Helicopter to meet the mission requirements of this Scope installed and ready for use, to include those items that are inherently included in a particular aircraft but not described in this Scope.
- Have sufficient fuel capacity, at Standard Mission Configuration aircraft weight, for one and one half (1.5) hours of flight plus a thirty (30) minute reserve at one hundred and twenty (120) knots Indicated Air Speed (IAS).
- Have the Automatic Flight Control System (AFCS).
- Have all equipment that draws engine bleed air operating, and any heating and de-ice/anti-ice equipment on, except that engine bleed air services may be turned off, if required in the Limitations Section of the Rotorcraft Flight Manual (RFM), for take-off hover and landing maneuvers.
- Have all installed equipment drawing electrical power.
- Not exceed any aircraft structural design or dynamic component or engine parameter limitation. Engine performance shall be based on engines that are operating at minimum installed specification, such that further degradation in engine performance would warrant maintenance action.

Performance Requirements

Temperature - The Helicopter shall be capable of continuous operations within the temperature range of minus thirty (-30) °C to plus forty-nine (+49) °C.

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Cruise Speed and Vne - The Helicopter shall be capable of maintaining one hundred and twenty (120) knots IAS in the Standard Mission Configurations at two thousand (2000) feet Pressure Altitude (PA) and twenty-two (22)°C. For any condition where Vne is one hundred and twenty (120) knots IAS or greater, Vne shall not be reduced below one hundred and twenty (120) knots IAS by the addition of any aircraft modifications or installed equipment.

Instrument Speed - Vmin(i) for instrument approaches utilizing the AFCS shall not exceed sixty-five (65) knots IAS.

Hover Performance - The Helicopter shall be capable of vertical and horizontal controlled hover maneuvers in still wind conditions in a Hover Outside Ground Effect (HOGE) at two thousand (2000) feet Pressure Altitude (PA) and twenty-two (22)°C.

Start and Shut-Down Wind Limitations - The Helicopter shall be capable of starting up and shutting down in minimum sustained wind conditions of forty (40) knots, with gusts to fifty (50) knots.

Airframe and Engine Systems

Landing Gear - The Helicopter shall be equipped with either fixed landing gear. If the Helicopter is equipped with a retractable system, a gear position indicating system, low altitude 'gear up' warning system and emergency extension system shall be installed. If equipped with a wheeled system, wheel brakes shall be installed.

The landing gear shall permit landing on soft and unprepared surfaces without sustaining Helicopter damage and without requiring unscheduled maintenance action. In addition, the landing gear shall incorporate provisions for towing on paved, grass or gravel surfaces.

Tail Rotor System - The tail rotor blade tip clearance above the ground shall be no less than six (6) feet, or the tail rotor system shall be shrouded.

Anti-Icing System – Icing protection shall be provided to the pitot-static system.

Fire Warning and Protection - The Helicopter shall be equipped with fire detection systems for the baggage compartment (if configured with one) and each power plant. Additionally, the power plants shall be equipped with a suppression system that shall be capable of providing a second discharge of extinguishing agent into an affected power plant compartment.

Fuel System - The Helicopter shall be equipped with a single gravity-refueling orifice or double adjacent orifices. All fuel tanks and lines shall be crashworthy in accordance with FAR Part 27 or Part 29, as applicable.

Airframe Hour Meter – The Helicopter shall be equipped with an airframe hour meter that shall be connected to the collective control system or landing gear and be capable of tracking aircraft operating hours.

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Health and Usage Monitoring System (HUMS) - The Helicopter shall be equipped with a Health and Usage Monitoring System (HUMS), or similar system, which incorporates integrated aircraft sensors, wiring, and data acquisition systems to provide, at a minimum, the following capability:

Rotor track and balance for all rotors.

Monitoring and recording of key systems parameters, to include:

- Engine starts
- Exceedances
- Dynamic Component Vibration
- Performance Trending

Data shall be capable of being downloaded and uploaded between the HUMS and a PC-based ground station computer using provided software. The ground station computer shall be capable of storing, processing, analyzing, and presenting HUMS data.

Cockpit and Cabin Acoustics – Helicopter interior noise levels shall not exceed ninety (90) db, measured without ear protection, while operating at any time within the Helicopter flight envelope.

Doors - The Helicopter shall be equipped with sliding doors on each side of the cabin that shall be capable of being opened and closed in flight at up to forty (40) knots IAS. Hoisting operations shall take place from the right cabin door. The dimensions of each open cabin door area shall allow for patient loading and unloading, as well as hoisting operations in which a United States Coast Guard (USCG) rescue basket is deployed to and from the cabin. All Helicopter doors shall feature a single key lock design, enabling all doors on all supplied Helicopters to be activated by the same key. A warning system shall be installed which indicates whether the doors are open or closed and locked. Cockpit ingress and egress shall be aided by steps at the cockpit doors.

Engine Compressor Washing - The Helicopter shall be equipped with engine compressor wash connectors.

Chip Detectors - Engines and transmission components shall be equipped with chip detectors.

Engine Inlet Protection - The Helicopter shall be equipped with non-bleed air engine inlet air management, barrier or filter systems to prolong engine life and protect engines from damage caused by foreign objects.

Emergency Locator Transmitter - The Helicopter shall be equipped with a 406 MHz Emergency Locator Transmitter (ELT) that interfaces with the installed Global Positioning System(s) (GPS). The ELT shall be capable of automatic activation, and manual activation from the cockpit.

Environmental Control - The Helicopter shall have an Environmental Control Unit (ECU) or Environmental Control System (ECS) that provides heated and cooled air with the ability to maintain cockpit and cabin temperature between eighteen (18)°C and twenty-nine (29)°C. The system shall provide defogging capability to cockpit windows.

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Windscreen Wipers - The Helicopter shall be equipped with a windscreen wiper system for both front windscreens that can be operated throughout the flight envelope.

Windshield protection: highest protection available for bird strikes.

Outside Air Temperature Gauge - The Helicopter shall be fitted with a system to indicate the outside air temperature in degrees Celsius.

Emergency Exits - The cockpit and cabin shall be equipped with emergency exits.

High Visibility Blades - The Helicopter shall have high visibility main rotor blades and tail rotor blades (if not shrouded).

Wire Strike Protection System - The Helicopter shall be equipped with a Wire Strike Protection System (WSPS). The system shall not compromise Helicopter ground handling operations.

Paint and Registration Numbers - The Helicopter paint scheme will resemble the current aircraft paint scheme of no less than five colors (5), detail of which shall be determined after contract award. Aircraft registration numbers shall be selected by County.

Cockpit (General)

Portable Fire Extinguisher - One (1) portable fire extinguisher shall be installed in the cockpit, and shall be accessible from the pilot and/or co-pilot positions.

Seating - The pilot and co-pilot seats shall be identical, interchangeable, and of energy attenuating, stroking design. Each seat shall provide vertical adjustment and be fitted with a four (4) or five (5)-point harness release mechanism.

Clocks - four (4) Daylight Readable LCD digital clocks with chronograph and countdown timer functions shall be installed at the pilot and co-pilot positions.

Publication and Chart Storage - Each pilot position shall be provided with an illuminated approach plate holder that shall be positioned so as not to obscure any cockpit instrumentation or outside viewing area. In addition, publication and chart storage shall be provided at each pilot position (location and dimensions to be determined).

Ventilation - Each pilot position shall be provided with fresh air vents.

Blackout Curtain - A blackout curtain shall be installed between the cockpit and cabin area that fully isolates the cockpit from any cabin lighting.

Flashlights - Two (2) portable LED white NVIS compatible rechargeable flashlights shall be provided and mounted in re-charging facilities in the cockpit.

Electrical

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The Helicopter electrical systems shall produce both twenty-eight (28)-volt DC and one hundred fifteen (115)-volt AC power, and shall be capable of meeting all of the electrical requirements of each of the Standard Mission Configurations. This capability shall not be compromised by the failure of a single generator or alternator failure, or a single-engine failure except that it is understood that some non-essential systems may be required to be shed for single generator or alternator operations. A one hundred fifteen (115)-volt AC, sixty (60) Hz inverter with Ground Fault Interruption (GFI) protection shall be installed to convert aircraft power for use with medical equipment.

The electrical power system shall be designed to meet the maximum power requirements of FAR 29.1309 and FAR 29.1351. The Helicopter shall also be designed to meet the IFR battery endurance requirement to allow a battery with an eighty-five (85) percent charge to power the essential aircraft systems for thirty (30) minutes in the event of a dual generator failure.

No one fault in the electrical system shall cause complete loss of electrical power, compromise mission completion, or be hazardous to flight safety.

A device to discharge airframe static electricity to ground shall be permanently installed to automatically ground the Helicopter upon landing.

Battery - At least one (1) heavy-duty twenty-eight (28) volt, fully charged "ready-for-use" Lead acid or equivalent battery shall be installed.

External Power - A twenty-eight (28) volt DC external power receptacle shall be installed.

Medical Shore Power - A one hundred fifteen (115)-volt AC medical equipment 'shore power' system shall be installed to allow the powering and charging of medical systems, equipment and cabin lighting when the Helicopter's power generating systems are inactive. A secondary dedicated 'shore power' outlet shall be installed to allow the powering of a carry-on onboard heater or other equipment. These two (2) one hundred fifteen (115)-volt AC plugs shall be compatible with any standard electrical extension cord. The shore power door shall incorporate a warning system to indicate the door status.

Electrical Outlets - A minimum of two (2) one hundred fifteen (115)-volt AC electrical outlets and two (2) twenty-eight (28)-volt DC electrical outlets shall be available in the cabin (positions to be determined). The total electrical current available shall be capable of providing simultaneous power to medical equipment use at all cabin outlets.

Lighting

The Helicopter shall be operated in a full Night Vision Imaging Systems (NVIS) environment. Therefore, no systems and components that produce light in or on the Helicopter (internal and external) shall interfere with pilot or crewmember use of NVIS. This pertains to all light sources except anti-collision and position (navigation) lights. In addition, installed lighting shall allow the pilot(s) to operate in the cockpit in an NVIS environment, while at the same time allowing crewmembers to operate in an unaided environment in the cabin. Compliance with this specification shall be demonstrated during County inspection. All such lighting systems and

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components shall comply with MIL-STD-3009 for Night Vision Imaging Systems (NVIS) compatibility. Such systems and components shall not compromise daylight readability.

Instrument lighting intensity levels shall be consistent throughout the cockpit. The Helicopter shall contain provisions for maintenance personnel to adjust the cockpit instrument panel lighting intensity of any panel to match that of all adjacent panels.

Where possible, internal and external lighting shall be of Light Emitting Diode (LED) type.

External Lighting

Anti-Collision Lights - A dual LED, high-intensity, strobe anti-collision lighting system shall be installed. This system may be combined with a position light system.

Loading Lights - External loading lights shall be installed to illuminate the ground in proximity to the cabin doors.

Hoist Light - Lighting shall be installed to illuminate the hoist area.

Tail Rotor Lights - Lighting shall be installed to illuminate the tail rotor environment.

Main Rotor Lights - Lighting shall be installed to illuminate the main rotor disc. This may be accomplished using the upper light of a Forward Facing Recognition Light system.

Landing Lights - Dual, high intensity, retractable landing lights shall be installed. At least one (1) of these lights shall have a minimum intensity of eight hundred thousand (800,000) candlepower. These lights shall be individually and independently controllable in azimuth and elevation from both pilot positions, except that one (1) light may be controllable in elevation only.

Hover Light - A single hover light system shall be installed.

Forward Facing Recognition Lights - Forward facing recognition lights with flashing capability shall be installed.

Search Light - A single, NVIS-compatible Nightsun In-Flight Change Over (IFCO) search light, together with a quick-release mounting kit shall be installed. The light shall be controllable from the pilot and co-pilot flight controls as well as the cabin area, and shall be slaved to the thermal imager/color camera

Internal Lighting

General - The Helicopter shall be equipped with a pilot or co-Pilot controlled, dual mode, variable intensity interior lighting system that will provide standard white light or NVIS white or blue-green compatible light.

A cabin lighting master control switch shall be positioned in the cockpit.

Map Lights - light shall be available at each pilot position.

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Cabin Lighting

A cabin lighting activation system shall be installed that shall be powered directly from the battery bus, and controlled independently of the cabin lighting master control switch. Activation shall be controlled from switches located inside the cabin at both cabin door positions.

The cabin lighting intensity controls shall be located within easy reach of the medical attendant seats.

Overhead LED bar lights shall be installed that illuminate the cabin area, with additional directed lighting above the primary and secondary patient positions, and the primary and secondary attendant seats.

Task lighting shall be installed at the hoist operator's position.

Emergency Lighting - All installed emergency lighting batteries shall be trickle-charged through the aircraft electrical system.

Flashlights - One (1) portable LED white NVIS compatible rechargeable flashlight shall be provided and mounted in a re-charging facility in the cabin.

Avionics

An avionics master switch shall be installed. The switch shall incorporate a fail safe to "Avionics On" feature.

Flight Instrumentation

General - The pilot and co-pilot positions shall be located in a side-by-side arrangement, and each position shall be provided with all instruments and instrument controls. To the maximum extent possible, the Helicopter shall be equipped with a fully integrated avionics suite that interfaces with installed Primary Flight Displays (PFD) and Multi Function Displays (MFD).

Display of Information - Large format, color, Liquid Crystal Display (LCD) or Cathode Ray Tube (CRT) PFDs shall be installed to display primary attitude and horizontal situation instruments and navigation information at both pilot positions. All other cockpit instrumentation information may be presented through integration into the above-mentioned displays, additional large format, color, LCD or CRT MFDs, conventional electro-mechanical analogue instruments, or a combination thereof.

Standby Instrumentation – The Helicopter shall be equipped with back-up instrumentation independent of the primary flight instrumentation systems, which shall include, at a minimum, attitude, heading, airspeed and barometric altitude information.

Communications Systems

General - The installed radio communications system shall be required to operate within the following frequency ranges:

Low-Band VHF 30 MHz to 50 MHz

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Mid-Band VHF	72 MHz to 76 MHz
Air Traffic Control (ATC) VHF	118 MHz to 136 MHz
High-Band VHF	138 MHz to 144 MHz 148 MHz to 174 MHz 220 MHz to 222 MHz
Low-Band UHF	406.1 MHz to 420 MHz 450 MHz to 470 MHz 470 MHz to 512 MHz
800 MHz Band	806 MHz to 824 MHz 851 MHz to 869 MHz
700 MHz Band	764 MHz to 776 MHz 794 MHz to 806 MHz

Public Use/Tactical Communications - The tactical (non-Air Traffic Control) radio suite shall be P25/National Incident Management System (NIMS) compliant, and shall permit simultaneous independent transmission and reception on any combination of the above-mentioned radio frequency bands without mutual interference and without interference with any other Helicopter system. The system shall include front-programmable transceiver(s) and allow for cross band repeat and simulcast on any or all bands (selectable by the operator). The tactical radio suite shall incorporate a minimum of one (1) primary transceiver in the cockpit and two (2) remote control head in the cabin. The remote control head shall provide remote slaved operation to the primary transceiver. Additionally, a system programmable 'guard frequency' capability shall be available.

Air Traffic Control Communications - The Helicopter shall be equipped with two (2) transceivers to operate in the Air Traffic Control frequency band.

Satellite Communication and Flight Following System – The helicopter shall be equipped with a system which shall have the following capabilities:

Real Time Satellite Flight Following.

Two-way text messaging with pre-programmed and user programmable capability

One (1) display and control unit in the cockpit, and two (2) display and control unit in the cabin.

Inter-Communication Control System (ICS)

The Helicopter shall be equipped with pilot and co-pilot audio mode selectors and two (2) cabin

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crew audio mode selectors incorporating keyed ICS, VOX ICS and volume adjustment capability. In addition, ICS stations shall be located at each passenger position in the cabin. All cabin crew and passenger ICS stations shall be equipped with an appropriate ICS cord incorporating a press to transmit, keyed ICS, VOX ICS and volume adjustment capability incorporating a press to transmit, keyed ICS, VOX ICS and volume adjustment capability.

Incorporating a press to transmit, keyed ICS, VOX ICS and volume adjustment capability.

The Helicopter shall be equipped with an external ICS connection to facilitate crewmember communication with ground crew.

Navigation Systems

General - The Helicopter shall have an integrated navigation system that is operable and programmable from either pilot's position.

Navigation Radios - The Helicopter shall be equipped with a minimum of two (2) VHF navigation transceivers that allow the Helicopter to fly Instrument Landing System ("ILS"), VHF Omni Radio Range ("VOR"), Localizer and Localizer Back Course instrument approaches.

Automatic Flight Control System (AFCS) and Flight Director (FD) - The Helicopter shall be equipped with a four (4)-axis digital Automatic Flight Control System and Flight Director system that shall be operable throughout the Helicopter flight envelope. This system shall have stability and control characteristics which shall, in the event of any single failure of a flight control system component or AFCS component, permit continued safe flight.

The AFCS shall provide the following:

- Pitch, roll and yaw axis stabilization, with attitude hold and turn coordination capability.
- Altitude Hold Mode (both radar and barometric).
- Airspeed Hold Mode.
- Heading Hold Mode.
- Vertical Speed Hold Mode.
- Auto Approach Mode. This capability shall enable the Helicopter to capture and track Wide Area Augmentation System (WAAS)-certified GPS, ILS (localizer and glide slope), VOR and Localizer Back Course approaches.
- Go Around Mode.
- Automatic Level Off capability that shall prevent the aircraft flying into the surface when in an AFCS-controlled descent.
- AFCS to Navigation Coupling. This capability shall enable the acquisition and tracking of a selected track based on WAAS-certified GPS, ILS, VOR, Localizer and Localizer Back Course signals, as well as a selected track based on pilot programmed flight routing with no pilot input required at each waypoint.

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Terrain Avoidance Warning System (TAWS) - The Helicopter shall be equipped with a Terrain Avoidance Warning System that shall meet, at a minimum, TAWS Class B requirements for helicopters.

Transponder - The Helicopter shall be equipped with two (2) independent Mode S transponder systems, one (1) of which shall be powered directly from the battery bus.

Marker Beacons - The Helicopter shall be equipped with a marker beacon system.

Radar Altimeter - The Helicopter shall be equipped with a radar altimeter system capable of providing absolute altitude information up to a minimum of one thousand (1000) feet, and shall incorporate a Decision Height (DH) selector and audio/visual warning system.

Flight Data Recorder (FDR) - The Helicopter shall have a crash-hardened flight data recording system that continually records essential flight information, to include at a minimum: position; speed; flight path; altitude; aircraft roll, pitch and yaw information; and heading. The system shall retain no less than ten (10) hours of Helicopter operation. Data shall be capable of being downloaded between the recorder and a PC-based ground station computer using provided software. The system shall allow the ground station computer to store, process, analyze, and present the data.

Cockpit Voice Recorder (CVR) - The Helicopter shall have a cockpit and cabin (HSA) voice recording device that is crashworthy and has a data recording capability which meets current or currently proposed FAR135 requirements. Notwithstanding this, the device shall have a data recording capability of at least two (2) hours before "record-over" commences.

Cockpit "Lipstick" Camera - The Helicopter shall have a cockpit "lipstick" camera capable of recording cockpit activity, and an associated video recorder. The crashworthy recorder shall have a data recording capability of at least two (2) hours before "record-over" commences.

Traffic Alert and Collision Avoidance System (TCAS) - The Helicopter shall be equipped with a Traffic Alert and Collision Avoidance System that, at a minimum, meets the capabilities of a TCAS I system.

Mission Equipment

General - Initial training on all mission equipment shall be provided to MDRF personnel by the equipment manufacturer or designated representative.

Multi-Mission Interior

The Helicopter shall be configured with a multi-mission interior that allows conversion from a two (2) patient medical configuration to an internal cargo transport configuration.

The color of all internal plastic panels and upholstery shall be determined during the project development phase with the Contractor.

The Contractor shall provide a means of demonstrating the design and functionality of the interior. All patients shall be loaded through the cabin side doors, with the primary patient being

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loaded through the right door, and the secondary patient through the left door.

If the Helicopter is not equipped with a separate Baggage Compartment, any equipment listed in the Desired Specifications section of this Scope shall be stored in the cabin and shall not interfere with cabin operations.

Floor

The Helicopter cabin floor shall have the following characteristics:

It shall be manufactured to provide optimal airframe protection from cabin fluid contamination; shall incorporate a drain, shall be easy to clean or decontaminate, and (if applicable) be easy to remove and reattach for maintenance purposes.

It shall have a durable, dark colored, puncture resistant, non-skid surface; the non-skid surface being enhanced at cockpit and cabin access areas and the hoist operator area.

A raised fluid dam shall separate the cabin from the cockpit.

The floor shall incorporate sufficient tie down attachment points to secure internal cargo.

The Helicopter cabin shall be equipped with two (2) primary medical attendant seats capable of rotation and lateral movement on surface mounted tracks. The seats shall be located at the head of the patient(s) and oriented along the Helicopter's longitudinal axis. The seats are to be identical, interchangeable, and of energy attenuating, stroking design. Each seat shall be fitted with a four (4)-point harness with rotary release mechanism and provide for a minimum of thirty (30) inches extended travel from the seated position.

All seating and litter pad fabric and material shall meet the flammability requirements of FAR Part 25.

The system shall be designed to meet FAA Crash Load requirements with a patient attached. The system shall accommodate a patient and associated medical equipment [the total of both will weigh no less than three hundred (300) pounds and whose length is no less than eighty-four (84) inches]. The primary patient loading system shall incorporate an articulating litter carriage device mounted on lateral floor tracks. Lateral movement within the cabin shall allow the litter base to be positioned in the left, center or right area of the cabin. The system will be removable by the crew, allowing unrestricted cabin floor space for utility or internal cargo configuration.

The system shall rotate tilt and translate longitudinally allowing single attendant positioning of the patient, and shall be capable of being extended through both sides respectful cabin door so as to minimize lifting during loading and unloading operations. Litter retention, movement and operation shall be provided by a single point control mechanism on each end of the litter system.

The system shall be designed to minimize pinch hazards and sharp edges and corners, and will accommodate the loading and restraint of various multi-sized medical backboards and

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stretchers (to include Miller, NATO, and Stokes). The system will be field removable to allow easy cleaning and maintenance.

Medical attendants shall have full body access to the patient, and the height of the patient off the floor shall provide for optimum airway access by an attendant seated at the patient's head.

The Helicopter shall be equipped with one (1) lightweight primary patient litter with a removable pad and a six (6)-point contamination-resistant restraint system. The litter shall be at least eighteen (18) inches wide, and the system shall incorporate a spinal angulator certified for elevated position during take off and landing.

Secondary Patient Loading System - At a minimum, the secondary patient configuration shall provide the capability to position a second patient, fully immobilized, on a litter on the left side of the cabin floor. If this methodology is utilized, the litter shall be retained in place by a floor-mounted latching mechanism. Alternative secondary patient configurations will be considered if proposed. Any litter associated with the Secondary System shall be required to be stored in the Helicopter.

Oxygen System

A gaseous medical oxygen system shall be available and shall be of a lightweight composite, along with regulators, a minimum of three (3) Ohio quick-disconnect outlets, two (2) flow meters and a pressure indicator. The bottle servicing system shall be equipped with a quantity gauge, quick-disconnect fittings and an easily accessible servicing port to allow servicing without bottle removal. The system shall incorporate a pilot-controlled shut-off valve and a high-pressure relief system.

Suction System

The Helicopter shall be equipped with a dual regulated, continuous and intermittent suction system with two (2) outlets and one (1) disposable collection reservoir and mount. Additionally, one (1) battery powered portable suction device with mount shall be installed.

Equipment Mounts

The cabin shall be equipped with mounting systems to accommodate a minimum of two (2) bio-medical monitoring devices. The systems shall be articulating, incorporate a quick disconnect capability, and shall provide monitor visibility and accessibility from all attendant seats. Due to potential changes in the type of medical equipment used. The location and type of mounts shall be determined during the project development phase with the Contractor.

Handholds

Handholds (assist straps) shall be installed over all cabin doors and in the ceiling area between the pilot and co-pilot seats.

IV Attachments

Four (4) low profile ceiling mounted attachment points for IV hooks shall be provided over the patient area.

Ceiling Hard Points

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Four (4) ceiling mounted hard points shall be provided to allow attachment of personnel safety harnesses.

Storage

The following storage shall be provided (all positions and dimensions to be determined):

- Modular, quick-removable medical storage pouches.
- A retention device for the primary medical bag that is within reach of each attendant.
- A modular storage container for accessories such as Night Vision Goggles, maps and personal floatation devices.
- A dual-lockable drawer or cabinet to secure controlled substances and/or handguns.
- Secure, protective storage for a laptop computer.
- Portable Fire Extinguisher - One (1) portable fire extinguisher shall be installed in the cabin.

Forward Looking Infrared Imaging System:

The helicopter shall be equipped with a forward looking infrared imaging system, Manufacture: FLIR Model: STAR -380 HDC (or approved equal), and have fast disconnect brackets and applicable wiring, dual monitor will be installed to facilitate monitoring by pilots and flight crews in the aft of the cabin.

Digital Video Recorder - The Helicopter shall be equipped with a Digital Video Recorder that shall be capable of recording input from the EO/IR system and hoist camera for a minimum of ten (10) hours utilizing internal or flash memory storage.

The Helicopter shall be equipped with a Digital Microwave System that shall be fully integrated with the EO/IR system.

A portable data link Handheld Receiver shall be provided with each Helicopter.

Rescue Hoist

The Helicopter shall be equipped with a Goodrich (or approved equal) rescue hoist system installed at the right cabin door. The hoist shall be capable of hoisting a minimum of six hundred (600) lbs at a minimum speed of one hundred and fifty (150) feet per minute. Minimum usable cable length shall be two hundred and fifty (250) feet.

Hoist controls, to include cable cutter operation, shall be available at the pilot and hoist operator's positions.

The hoist shall be equipped with a lighting system, and a camera and recording device that shall be integrated into the onboard video recording system. The camera image will be displayed on the EO/IR and Tactical Moving Map displays.

Cargo Hook - The Helicopter shall be equipped with hard points, provisions and controls for a one thousand (1000) lb capacity cargo hook. Three (3) hooks shall be provided for fleet use. Additionally wiring will be provided to accommodate fire suppression Bambi bucket on all aircrafts.

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Miscellaneous

A full set of mooring rings and rough weather tie-downs shall be provided for the Helicopter.

Helicopter Jacking Equipment - Jacking pads or points shall be supplied to facilitate maintenance and/or removal of the landing gear.

Training (General)

The Contractor shall provide flight and ground training for eighteen (18) County pilots and six (6) County mechanics as listed below.

Training shall be provided at no additional cost to the Miami Dade County.

Pilot Initial Training

Pilot Factory School initial flight training, in the Contractor's Helicopter or in an approved simulator, is to be provided, at the time of acceptance of the first Helicopter. Thereafter, pilots shall attend training on a monthly basis until all pilots have completed the training.

All training costs including travel for pilots will be included in lease cost.

Factory School Technician/Maintenance Training

Training sequence shall begin four (4) months prior to delivery of the first Helicopter, with two (2) technicians attending.

Thereafter, two (2) technicians shall attend each month until all six (6) have completed training.

Upon completion of maintenance technician training the Contractor's training center shall issue a certificate of completion, itemizing all areas of maintenance training completed, and endorsing technicians as certified to conduct maintenance tasks on the Helicopter.

All training costs including travel for technicians will be paid by the Contractor.

Production Inspections and Delivery

County may inspect the Contractor's facilities at any reasonable time. County cost to conduct inspection visits at the Contractor's facilities shall be borne by the Contractor. Without limiting the County inspection rights, the following may be used as a guide to the County intentions.

The inspection team normally will consist of two (2) County representatives.

Two (2) inspection visits or more shall be conducted during the production and completion of each of the quantity of Helicopters for a specific delivery date. The Contractor shall pay necessary airfare and adequate per diem for (2) County personnel to conduct these three (3) inspections per specific delivery date.

One (1) visit shall be conducted at the Contractor's production facilities for inspection of the basic airframe, engines, drive train, rotors, flight controls, drawings, manuals and certification documentation of the Helicopters.

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The County will review all completion drawings and equipment schedules during the initial inspection visit.

Two (2) progress inspection visits will be conducted at the Contractor's completion facility during the completion phase of the Helicopters.

Inspections will normally be coordinated at equal intervals between the initiation of the completion work and scheduled delivery date.

Return visits may be necessary to complete the delivery and performance evaluation. All costs (lodging, transportation, and per diem) associated with any activity necessary to consummate either delivery or performance evaluation during return visits shall be borne by the Contractor.

Inspections are for the purpose of assuring that all work is completed and all components are installed in accordance with contract specifications.

Final Inspection

Final inspection and acceptance of the Helicopters shall be at Tamiami Air Rescue Station, Miami FL 33186. Any discrepancies or non-conformity to contract specifications shall result in the Contractor removing the Helicopters for repair and/or modification, with all work accomplished and the Helicopters returned within thirty (30) days.

The Contractor shall provide for all fuel and lubricants necessary for the final inspection flight.

The Contractor shall provide lodging and sufficient per diem for three (3) County employees (2 Pilots, 1 Mechanic) for the duration of the ferry flight based on an eight- (8) hour crew day with no more than six (6) hours of flight time each day.

All delays, failures (mechanical) prior to County final acceptance shall be borne and corrected at Contractor's expense.

Maintenance of Aircraft – Power by the hour

The Contractor shall provide maintenance services based upon a Power by the hour maintenance program.

Parts, Tools and Services – Purchase and Rental

The Contractor shall provide parts, tools and services for purchase/rental as needed by the County.

Hard Copy Manuals

The Contractor shall provide the following manuals, publications, updates, subscriptions and systems which shall be delivered to Miami Dade Fire Rescue at no additional cost to the County:

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One (1) per Helicopter - Rotorcraft Flight Manuals and associated Supplements plus two (2) year revision service.

Two (2) in Total – Engine Maintenance Manuals and associated Supplements plus two (2) year revision service, delivered two (2) months prior to the first Helicopter delivery.

Two (2) in Total – Engine & Airframe Illustrated Parts Catalogs plus ten (2) year revision service, delivered two (2) months prior to the first Helicopter delivery. This also includes price list(s) for the aircraft (system)

Two (2) in Total – Airframe Maintenance Manuals and Associated Supplements plus two (2) year revision service, delivered two (2) months prior to first Helicopter delivery.
Engine & Airframe Log Books for each Helicopter at delivery.

Weight & Balance Data for each Helicopter at delivery.

Two (2) in Total – Wiring Diagrams and Schematics for all electrical systems delivered with the first Helicopter. Diagrams shall be the latest revision.

Operating & Maintenance Manuals for all installed avionics and equipment for each Helicopter plus ten (2) year revision service, delivered two (2) months prior to first Helicopter delivery.

Two (2) in Total - Helicopter schematics delivered with first Helicopter. Schematics shall be the latest revision.